

CLAIMS

1. A system for transferring molecules from a liquid phase to a gaseous phase with pollutant removal, the system comprises:

5 a) gas convection means 20, which make a gaseous stream converge toward the liquid membrane generation means 30;

10 b) liquid membrane generation means 30 comprising a plurality of membrane cells 31 which generate a liquid membrane upon contacting with liquid supplying means 40, wherein such liquid membranes by being in contact with the gaseous stream coming from the convection means 20 collapse, the collapsed liquid material covers the gas dispersed
15 particles, and removes particles from the gaseous stream while simultaneously transfers liquid molecules to the gaseous stream;

20 c) liquid supplying means 40 to provide a liquid supply to the membrane generation means 30 for the formation of liquid membranes;

d) ejection means 50, which provide an exit for the gases enriched with the component transferred from the liquid phase.

25 2. A system for transferring molecules from a liquid phase to a gaseous phase with pollutants removal according to claim 1, where the membrane generation means 30 are formed from a plurality of discs 32 and plates 33 that form a plurality of

membrane cells 31 in a cylindrical arrangement.

3. A system for transferring molecules from the liquid phase to a gaseous phase with pollutants removal according to claim 2, wherein the discs are
5 polygonal.

4. A system for transferring molecules from the liquid phase to a gaseous phase with pollutant removal according to claim 2, wherein the interior part of the cylindrical arrangement of membrane cells
10 31 defines a chamber 35 where solid particles are decanted, and the gas stream collides over the liquid surface.

5. A system for transferring molecules from the liquid phase to a gaseous phase with pollutant
15 removal according to claim 2, wherein the plurality of membrane cells 31 in contact with the liquid supply 40 form side liquid membranes 311 in the side orifices 322 of cells 31 and/or an upper membrane 312 in the widest portion of the cell and/or a lower
20 membrane 313 in the thinnest portion of the cell 31 and/or parallel internal membranes 312 and 313 in the interior part of the membrane cell 31.

6. A system for transferring molecules from the liquid phase to a gaseous phase with pollutants
25 removal according to claims 1 to 5, wherein the liquid is water and the gas is air.

7. An apparatus for transferring molecules from the liquid phase to a gaseous phase with

pollutant removal, said apparatus comprises:

- a) a housing 10,
 - b) a fan 21 to force gas circulation to the interior of the transfer apparatus,
 - 5 c) a liquid container 41
 - d) a plurality of cells 31 for membrane generation in a cylindrical arrangement, being this approximately cylindrical arrangement partially submerged in the liquid contained in container 41, 10 wherein the plurality of cells 31 in a cylindrical arrangement rotates on its own axis, thereby it generates a liquid membrane which when emerging it collapses upon contact with the gaseous stream provided by fan 21; the liquid that formed the 15 membrane covers the particles, humidifies them, and decants them, thereby removing all dispersed particles in the gas stream while it favors the liquid transference to the gaseous stream;
 - e) exterior channels 51 to uniform the 20 exiting gas stream enriched with the liquid phase component.
8. An apparatus for transferring molecules from the liquid phase to the gaseous phase with pollutant removal according to claim 7, wherein the 25 gas stream is air and the liquid is water.
9. An apparatus for transferring molecules from the liquid phase to a gaseous phase with pollutant removal according to claim 7, further

comprising aromatizers and disinfectants.

10. An apparatus for transferring molecules from the liquid phase to a gaseous phase with pollutant removal according to claim 7, wherein the cylindrical arrangement rotates continuously or intermittently so that the membrane cells 31 follow the stages: a) liquid immersion; b) membrane formation; c) upcoming gas and membrane breakage; and d) enriched gas ejection.

11. An apparatus for transferring molecules from the liquid phase to the gaseous phase with pollutant removal according to claim 7, wherein the interior of the cylindrical arrangement of membrane cells 31 defines a chamber 35 where solid particles are decanted, and the gas stream collides on the liquid surface.

12. An apparatus for molecule transfer from the liquid phase to the gaseous phase with pollutant removal according to claim 7, wherein cells 31 have an entry area bigger than the exit area, thereby the gaseous stream exits with a higher speed than the speed it enters with, before contacting the liquid surface.